

REMARKS

This Amendment is filed in response to the Office Action dated December 28, 2004, which has a shortened statutory period set to expire March 28, 2005.

CLAIMS

Rejections Under 35 U.S.C. 103 - Elliott

Claims 1, 8, 14, 17, 18, 19, 20, 21, 24, 27, 33, 35, 36, 37, 41, 44, and 47 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,669,979 (hereinafter "Elliot"). Applicant respectfully traverses these rejections in view of the foregoing amendments to the claims and the following remarks.

Claim 1, as amended, recites in part:

[A]n energy beam source ... configured to remove a portion of the contaminant layer to expose an analysis area ... and a thin film analysis module for performing at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical analysis on the thin film at the analysis area. (Emphasis added.)

Support for this amendment is found in the specification as originally filed at least at paragraph 24. No new matter is added.

The Office Action states that while Elliot:

does not explicitly state ... a thin film analysis module for measuring a thing film ... it would be obvious ... that the monitor [520 in FIG. 15] was a thin film analysis module for measuring thin films, for the monitor measures the cleanliness of laser cleaned thin film samples."

Applicant respectfully submits that even assuming, arguendo, that module 520 of Elliott can be considered "a thin film

analysis module" as recited by Claim 1, Elliott does not teach that the module can:

[P]erform[] at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical analysis

as recited by Claim 1. Elliott is purely directed towards a cleaning method, and monitor 520 of Elliott is intrinsically tied to the cleaning process. Therefore, Elliott does not disclose or suggest any of the metrology operations recited by Claim 1.

In addition, Elliott teaches a method in which "the **entire surface** of the substrate [is] passed beneath the illumination zone 468" (Elliott, col. 22, lines 26-27, emphasis added).

Therefore, Elliott actually teaches away from:

[An] energy beam ... configured to **remove a portion of the contaminant layer to expose an analysis area** on the thin film; and a thin film analysis module for performing at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical **analysis on the thin film at the analysis area** (emphasis added)

as recited by Claim 1.

Thus, for at least these reasons, Claim 1 is allowable under 35 U.S.C. 103(a) over Elliott. Claims 8, 14, 17-21, and 24 depend from Claim 1, and are therefore allowable under 35 U.S.C. 103(a) over Elliott for at least the same reasons that Claim 1 is allowable. Accordingly, Applicant respectfully requests reconsideration and allowance of Claims 1, 8, 14, 17-21, and 24.

Claim 27, as amended, recites in part:

[D]irecting an energy beam at a first location on the contaminant layer while the test sample is on the stage, the energy beam removing a first portion of the contaminant layer to expose a first analysis area of the thin film; and performing at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical analysis on the thin film at the first analysis area while the test sample is on the stage. (Emphasis added.)

Support for this amendment is found in the specification as originally filed at least at paragraph 24. No new matter is added. Claim 37, which depends from Claim 27, is amended to maintain consistency with amended Claim 27.

Therefore, for reasons substantially similar to those presented above with respect to Claim 1, Claim 27 is allowable under 35 U.S.C. 103(a) over Elliott. Claims 33 and 35-37 depend from Claim 27, and are therefore allowable under 35 U.S.C. 103(a) over Elliott for at least the same reasons that Claim 27 is allowable. Accordingly, Applicant respectfully requests reconsideration and allowance of Claims 27, 33, and 35-37.

Claim 41, as amended, recites:

means for directing an energy beam at the contaminant layer during a cleaning operation, the energy beam removing a portion of the contaminant layer to expose an analysis area on the thin film; and means for performing at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical analysis on the thin film at the analysis area. (Emphasis added.)

Support for this amendment is found in the specification as originally filed at least at paragraph 24. No new matter is added.

Therefore, for reasons substantially similar to those presented above with respect to Claim 1, Claim 41 is allowable under 35 U.S.C. 103(a) over Elliott. Claims 44 and 47 depend from Claim 41, and are therefore allowable under 35 U.S.C. 103(a) over Elliott for at least the same reasons that Claim 41 is allowable. Accordingly, Applicant respectfully requests reconsideration and allowance of Claims 41, 44, and 47.

Rejections Under 35 U.S.C. 103 - Elliott in view of Rangarajan

Claims 2-5, 29, 30, and 42 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott in view of U.S. Patent No. 6,771,374 (hereinafter "Rangarajan"). Claims 2-5, 29, 30, and 42 are cancelled, rendering the rejection of those claims moot.

However, Applicant respectfully notes that the characterization in the Office Action of Rangarajan as teaching "a scatterometry based measurement system [for] measuring a sample while being processed such as during cleaning" represents an improper interpretation of Rangarajan. Rangarajan describes "manufacturing techniques [that] may involve **a series of steps** including cleaning, thermal oxidation or deposition, masking, etching, and doping." (Rangarajan, col. 1, lines 29-31, emphasis added.) Rangarajan does not disclose or suggest "measuring a sample while being processed such as during cleaning" as indicated by the Office Action.

Rejections Under 35 U.S.C. 103 - Elliott in view of Morris

Claims 9-13, 15, 34, and 43 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott in view of U.S. Patent No. 6,472,295 (hereinafter "Morris"). Applicant respectfully traverses these rejections.

As noted above, Elliott does not teach:

[A] thin film analysis module for performing at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical analysis

as recited by Claim 1. Morris is directed towards "a method and apparatus for employing laser light to generate high precision through-cuts in a target material" (Morris, col. 1, lines 6-8), and does not mention any "thin film analysis module" as recited in Claim 1. Therefore, Morris does not remedy the deficiencies of Elliott with respect to Claim 1.

Claims 9-13 and 15, which all depend from Claim 1, are therefore allowable under 35 U.S.C. 103(a) over Elliott in view of Morris. Accordingly, Applicant respectfully requests reconsideration and allowance of Claim 9-13 and 15.

For similar reasons, Morris does not remedy the deficiencies of Elliott with respect to Claims 27 and 41. Therefore, Claims 34 and 43, which depend from Claims 27 and 41, respectively, are allowable under 35 U.S.C. 103(a) over Elliott in view of Morris. Accordingly, Applicant respectfully requests reconsideration and allowance of Claims 34 and 43.

Rejections Under 35 U.S.C. 103 - Elliott in view of Fukuda

Claims 6, 31, and 42 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott in view of U.S. Patent No. 4,876,983 (hereinafter "Fukuda"). Claims 6, 31, and 42 are cancelled, rendering the rejection of those claims moot.

Rejections Under 35 U.S.C. 103 - Elliott in view of Haight

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott in view of U.S. Patent No. 6,333,485

(hereinafter "Haight"). Applicant respectfully traverses this rejection.

As noted above, Elliott does not teach:

[A] thin film analysis module for performing at least one of single wavelength ellipsometry (SWE), spectroscopic ellipsometry (SE), reflectometry, grazing incidence x-ray reflectometry (GXR), x-ray fluorescence (XRF), electron microprobe analysis (EMP), non-contact-based electrical analysis, and contact-based electrical analysis

as recited by Claim 1. Haight is directed towards "a method to localize laser induced breakdown" (Haight, col. 1, lines 36-37), and does not mention "a thin film analysis module" as recited in Claim 1. Therefore, Haight does not remedy the deficiencies of Elliott.

For at least this reason, Claim 16, which depends from Claim 1, is allowable under 35 U.S.C. 103(a) over Elliott in view of Haight. Applicant therefore respectfully requests reconsideration and allowance of Claim 16.

Allowable Subject Matter

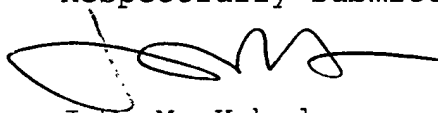
Claims 7 and 32 stand objected to as being dependent on rejected base claims, but would be allowable if rewritten in independent form. Applicant notes with appreciation the Examiner's recognition of allowable subject matter in Claims 7 and 32. Claims 7 and 32 are rewritten as new Claims 51 and 52, respectively, incorporating all the limitations of their respective base claims and any intervening claims. Accordingly, Applicant respectfully requests consideration and allowance of Claims 51 and 52.

CONCLUSION

Claims 1, 8-21, 24, 27, 33-37, 41, 43-44, 47, 51, and 52 are pending in the present Application. Reconsideration and allowance of these claims is respectfully requested.

If there are any questions, please telephone the undersigned at (408) 451-5903 to expedite prosecution of this case.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as FIRST CLASS MAIL in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on March 28, 2005.

3/28/2005
Date

Rebecca A. Baumann
Signature: Rebecca A. Baumann